REMARKS/ARGUMENTS

Claims 1-2, 5-9, 14-16 are pending in this application. Claims 3-4 and 10-13 have been canceled without prejudice or disclaimer. Claims 1-2 and 14-15 have been amended. No new matter has been added.

Claim Rejections under 35 U.S.C. §112

Claims 10-16 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claims the subject matter which applicant regards as the invention. Device claims 10-13 have been canceled without prejudice or disclaimer and Applicants respectfully point out that pending claims 14-16 are method claims. The rejection mentions claims 14-16, however, the rejection does not apply to these claims since they are method claims. Accordingly, the rejection under 35 U.S.C. §112, second paragraph, should be withdrawn.

Claim Rejections under 35 U.S.C. §§ 102 and 103

Claims 1-3, 5-8, 10-11 and 13-15 are rejected under 35 U.S.C. §102(b) as being anticipated by Oryo, U.S. Patent No. 5,745,263; and claims 4 and 12 are rejected under 35 U.S.C. §103(a) as being unpatentable over Oryo, U.S. Patent No. 5,745,263 in view of Lin, U.S. Patent No. 6,185,004 B1. Applicants request reconsideration of the rejections in view of the amendments to the claims and for the following reasons.

Claims 3-4 and 10-13 have been canceled without prejudice or disclaimer. Further, the

limitations of cancelled claim 4 have been added to independent claims 1, 2, 14 and 15, thereby rendering moot the rejection of claims 1-3, 5-8, 10-11 and 13-15 under 35 U.S.C. §102(b).

As is well known, color is viewed by parameters such as brightness, hue, and colorfulness. On computers, however, it is more common to describe color by three components, normally red, green and blue (RGB), which are related to the red, green and blue phosphors on a computer monitor. On the other hand, in the printing industry, cyan, magenta, yellow and black (CMYK) are used to specify color since these colors are related to the reflectance and absorbance of inks on paper. The present invention is directed to conversion of a first RGB color component signal to a second color component signal of CMYK.

According to the present invention, as shown in Fig. 1, a printer 10 has a scanning function performed by a scanner portion 30 for reading an original and converting the original thus read to a first color component signal of RGB. Then, the printer portion 40 converts the RGB signal to CMYK signal and performs a printing operation. This is performed by an image processor 41 that converts the RGB signals to the CMYK signals by referring to a lookup table in which combinations of color conversion are recorded. Thereafter, the CMYK signals are subjected to half-tone processing, etc., and then converted to data having a data structure printable in the print engine portion 42.

In greater detail, in a first embodiment of the invention, each of the RGB signals is assumed to be represented with 256 levels by using 8 bits. As shown in Figs. 3A, a gamma 321, which is used for gradation correction, is set so that opposite ends of the RGB colors including 20 gradations, that is a deep color area (0 to 20) and a light color area (235 to 255) are converted to -0- (black) and -255- (white), respectively, for all three of the colors (RGB). By

converting each of the RGB colors with the gamma 321 so as to expand the deepest portion and the lightest portion as shown in Fig. 3B, a black-like portion, that is, a black character portion is converted to an RGB signal (0,0,0) representing clear black, and a white-like portion, that is, a portion having the background color of the sheet is converted to an RGB signal (255, 255, 255) representing white. Thereafter, the RGB signals are converted to respective colors of CMYK which are printable by the print engine (*see*, step S103 of Fig. 2). This conversion is generally carried out by referring to a lookup table (LUT, 411), which stores the correspondence of the values of RGB with the respective values of CMYK. For example, the RGB signal (0,0,0) is converted to the CMYK signal (0,0,0,100), that is, 100%-black, and the RGB signal (255, 255, 255) is converted to the CMYK signal (0,0,0,0), that is, so that no printing is performed. Additionally, Fig. 4 shows a second embodiment that performs conversion of RGB signals to CMYK signals by referring to a lookup table, in accordance with the invention.

Oryo discloses a color correcting method performed from a space expressed by L (lightness), C (Saturation) and H (hue) into the same space using an image. Hence, this color correcting method is a conversion performed within the same color space. In contrast, according to the present invention, as set forth in claim 1, as amended, color correction is performed during conversion from one color space to a different color space, that is, from RGB to CMYK. In this regard, the §103(a) rejection relies upon Lin for disclosing color conversion from RGB into CMYK. However, the existence of the two references does not suggest to one having ordinary skill in the art of their combination, as proposed by the Examiner.

In the present invention, by performing color correction during conversion from RGB into CMYK, even a subtle color expression can be reproduced. Specifically, according to the

invention, the lookup table is formed so that the CMYK color component signal represents black when each of the color signals constituting the RGB color component signal is in a range from a value indicating a deepest color state to a predetermined value, or represents white when each of the color signals constituting the RGB color component signal is in the range from a value indicating the lightest color state to a predetermined value. *See*, claims 1 and 2 of the present application.

The present invention overcomes the problem in the prior art in which it has been found difficult to maintain the same color when that color is converted from one color space into a different color space. This has been particularly evident in the printing of letters and characters. By the present invention, the letters and characters can be sharply reproduced in black, or backgrounds can be reproduced in white, and it would not have been obvious to one having ordinary skill in the art at the time of the invention to combine Oryo and Lin to arrive at the invention as claimed. Therefore, the rejection under 35 U.S.C. §103(a) should be withdrawn.

CONCLUSION

In view of the foregoing, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.

By _____
John R. Mattingly
Reg. No. 30,293
(703) 684-1120

JRM/so
Date: March 13, 2006